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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/814,082	03/10/1997	MASANORI TAKAHASHI	684.2465	4251

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EXAMINER

NGO, HUYEN LE

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 02/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

08/814,082

Applicant(s)

TAKAHASHI ET AL.

Examiner

Julie-Huyen L. Ngo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 13-15 and 18-29 is/are pending in the application.
- 4a) Of the above claim(s) 8, 9, 16 and 19-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7, 13-15 and 18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 1-4, 7, 13-15 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 13 recite in lines 3-4 and lines 9-10, respectively, that the first/output electrodes (15p) are directly connected to the first substrate's electrode terminals then how can the first/output electrodes (15p) be connected to the first substrate's electrode terminals with an anisotropic conductive adhesive, as amended in the last clause of claims 1 and 13. Also this recitation renders claims 4 and 15 indefinite, since these claims recite that the first /output electrodes are connected to the first substrate's electrode terminals solely with an anisotropic conductive adhesive.

Claims not specifically mentioned above are rejected as bearing the defect(s) of the claim(s) from which they depend.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject

matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 7, 13 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted Prior Art (APA) in view of Kishigami (US 5,467,210).

As to claims 1, 2 and 13, Applicant's admitted prior art discloses, in figure 13, a display apparatus having a circuit connection structure comprising:

- _ a first substrate (1bp) having electrode terminals (12p) formed thereon
- _ a semiconductor device (5p) having first/output electrodes (15p) and second/input electrodes (15p); with the first electrodes connected to the electrode terminals (12p);
- _ a flexible wiring member (4ap) having thereon a pattern of conductors (17) each extending from a first conductive end and a second conductive end on the flexible wiring member with the first conductive ends of the conductors connected to the second electrodes of the semiconductor device (5p); and
- _ a circuit board (3p) disposed with a space from the first substrate (1bp) and connected to the second ends of the semiconductors (5p) on the flexible wiring member (4ap),

wherein said semiconductor device (5p) bridges the space between the first substrate (1bp) and the circuit board (3p).

However, the semiconductor device (5p) in the APA device does not have the first/output electrodes (15p) directly connected to the electrode terminals (12p) of the first substrate (1bp).

Kishigami teaches (abstract, col. 5, lines 57-67 and figure 4) directly connecting the electrode terminals (14a, 17a, 20a) of substrate (13) to the corresponding bumps (41) of electrodes (26, 27 and 28) on the semiconductor device (21) for reducing the manufacturing cost of the LCD module (11).

Therefore, it would have been obvious for one of ordinary skill in the art to directly connect the semiconductor's first/output electrodes (15p) to the electrode terminals (12p) of the first substrate (1bp) in the APA device, as taught by Kishigami for reducing manufacturing cost.

Although the circuit board (3p) in the APA device does not show electrode terminals connected to the conductors' second conductive ends, it is well known in the art for a circuit board to have electrode terminals formed thereon for making electrical contacts between a circuit board and any other circuit boards, e.g., a flexible wiring member or any other connecting boards.

Therefore, it would have been obvious for one of ordinary skill in the art to expect that there are electrode terminals on the circuit board (3p) of the APA device, and to connect the conductors' second conductive ends to the circuit board's electrode terminals for making electrical contacts between the circuit board (3p) and the flexible wiring member (4ap) in the APA device.

As to claims 3 and 14, it is well known and conventional in the art to connect the electrode terminals of different panels/boards, e.g., a flexible tape carrier package (FTC) and driver circuit board or Printed Circuit Board (PCB) to each other by tape-automated bonding method (admitted by Applicant on page 1, line 25).

Therefore, it would have been obvious for one of ordinary skill in the art to connect the semiconductor device (5p)'s electrode terminals (15p) to the first conductor ends of conductors (17) on a flexible wiring member (4ap) by tape-automated bonding method.

As to claims 7 and 18, the connecting part between the second electrodes (15p) of the semiconductor device (5p) and the first conductor ends of the conductors on the flexible wiring member (4ap) is sealed with a resin (16p). See figure 13.

Claims 4 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA device in view of Kishigami as applied above to claims 1 and 13, and further in view of Hirai (US 5,311,341).

It is conventional and well-known in the art to connect electrode terminals of two different panels/boards with each other solely by an anisotropic conductive adhesive for easy replacement or detachment of defected panels/boards, as evidenced by Kishigami (figure 1b, col. 4, lines 63-69 and col. 5, lines 51-54).

Furthermore, Hirai also teaches that it is easy to replace or disconnect a defected TAB 4 from the liquid crystal panel by having the electrode terminals of the TAB 4 connected to electrode terminals (2) of the liquid crystal display panel by means of the anisotropic conductive adhesive (9).

Therefore, it would have been obvious for one of ordinary skill in the art to connect the first electrodes/output electrode (15p) of the semiconductor device (5p) to the substrate's electrode terminals (12p) of the modified device of APA in view of Kishigami solely by an anisotropic conductive adhesive for easy replacement of defected panels/boards, as taught by Hirai or Kishigami.

Response to Remarks

Applicant's argument filed on January 14, 2002 (paper no. 21) has been fully considered but they are not persuasive.

In response to Applicant's remarks with respect to figure 13 of APA device and the deficiency in Kishigami reference regarding the feature "wherein said semiconductor device bridges the space between the first substrate and the circuit board,"

Applicant is to note that this feature clearly showed in figure 13 of APA with the semiconductor device (5p) bridging the space between the first substrate (1bp) and the circuit board (3p) with the input and output electrodes connected to the circuit board (3p) via the flexible member (4ap), and the substrate (1bp), respectively. However, since the second /input electrodes of the semiconductor device (5p) already connected to the circuit board (3), the Examiner merely relied on Kishigami's teaching (col. 5, lines 57-67 and figure 4) for directly connecting only the first/output electrodes (15p) of the semiconductor device (5p) to the electrode terminals (12p) of the first substrate (1bp) in the APA device (fig. 13).

In response to Applicant's remarks with respect to Hirai reference, the Examiner merely relies on Hirai's teaching, as a conventional and well-known technique in the art,

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to bond/connect only the first electrodes/output electrodes (15p) of the semiconductor device (5p) to the substrate's electrode terminals (12p) of the modified device of APA in view of Kishigami by an anisotropic conductive adhesive.

Therefore, the combination of APA device and Kishigami is proper and would have given the **same results** since the same structure for the recited circuit connection structure or display apparatus can be obtained.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Contact Information

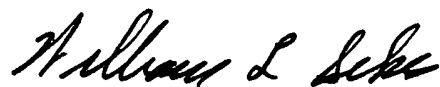
Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Julie Ngo, whose telephone number is (703) 305-3508.

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Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0956.

Papers related to this application may be submitted to Art Unit 2871 by facsimile transmission. The Examiner direct fax number is (703) 746-4709. Please call before sending any paper.

February 7, 2002



William L. Sikes

Supervisor Patent Examiner

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